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16-FOOT WIND TUNNEL

Use: To investigate at high Reynolds numbers and high air speeds various aerodynamic problems of military airplanes, especially cowling and cooling of full-size aircraft engines.

Authority: Second Deficiency Bill, fiscal year 1939; approved May 2, 1939.

Location: New area, Langley Field, Va. Approved by Secretary of War, August 23, 1939.

History: Preliminary work on 16-foot wind tunnel started February 11, 1939.  
Placed in operation December 5, 1941.

Construction:

	<u>16-foot wind tunnel</u>	<u>Office annex</u>	<u>Total</u>
Dimensions of buildings	382' x 143' x approx. 97'	145' max. length, max. width 63', av. width approx. 55½', min. height 12', max. height 67'	
Ground area	54,600 sq ft	8,100 sq ft	62,700 sq ft
Second floor area		5,510 sq ft	5,510 sq ft
Cubic contents		232,110 cu ft	
Character	Structural steel	Structural steel with brick	
Type and thickness of walls	1/4 in. steel	Brick and tile (brick outside 12½" thick, office walls plastered)	
Type and thickness of floor		1st floor 6" and 8" concrete - 2nd floor 4" concrete	
Type and thickness of roof		Steel deck on steel joist with 1" insulation, 5-ply felt and gravel covered	

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Cost Summary

Structure cost	\$1,707,789.94
Equipment	51,722.41

Detailed Costs

Structure		
Design	\$ 22,580.10	
Structure	901,338.99	
Built-in mechanical equipment, including drive equipment	604,809.36	
Built-in electrical equipment	<u>23,807.86</u>	\$1,552,536.31
Technical and engineering services (10 % of structure costs - \$1,552,536.31)		<u>155,253.63</u>
		1,707,789.94
Inventoried mechanical equipment	17,827.47	
Inventoried instruments	5,412.22	
Inventoried furniture	5,368.62	
Inventoried electrical equipment	122.34	
Inventoried fire-fighting equipment	598.00	
Additions through P.J.O. 136 - Equipment and Alterations - 16-foot wind tunnel	<u>22,393.76</u>	<u>51,722.41</u>
		1,759,512.35

Main Contractors

16-foot wind tunnel: Contract NAW-723, Pittsburgh-Des Moines Steel Co.; started February 28, 1940; completed January 30, 1942 \$733,123.15

Office building: Contract NAW-1000, Blackwell Engineering and Construction Co.; started February 2, 1941; completed November 15, 1941 \$137,383.45

Motors and control equipment: Contract NAW-745, General Electric Co.; started February 19, 1940; completed November 23, 1941 \$418,368.00

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Model supports for scale equipment at 16-foot tunnel at Moffett Field and at Langley Field (1/2 total contract price shown here chargeable to each place): Contract NAW-1013, Consolidated Steel Corporation; started September 28, 1941; completed January 20, 1941 \$57,499.00

Scale equipment for 16-foot tunnel: Contract NAW-1110 Taller Cooper; started May 15, 1941; completed June 7, 1941 \$62,626.50